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ABSTRACT

The existence of a global language proficiency factor is discussed. This factor, cognitive/academic language proficiency (CALP), is directly related to IQ and to other aspects of academic achievement. It accounts for the bulk of reliable variance in a wide variety of language learning measures. Three propositions concerning CALP are reviewed. (1) CALP can be empirically distinguished from interpersonal communicative skills such as accent and fluency in first language (L1) and second language (L2). (2) CALP proficiencies in both L1 and L2 are manifestations of the same underlying dimension. (3) Because the same dimension underlies CALP in both L1 and L2, older learners, whose proficiency is better developed, will acquire L2 CALP more rapidly than younger learners. The relevance of this analysis for the concepts of semilingualism, code-switching, and bilingual education is outlined. Semilingualism is a manifestation of low CALP in both languages. CALP will be less active and effective when the L1 and the L2 are very dissimilar. In the presence of negative affective variables such as low motivation, CALP will not be applied to learning L2. If motivational involvement and adequate exposure to an L1 or L2 exist, CALP will be promoted in both languages regardless of which is the language of instruction.

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Cognitive/Academic Language Proficiency, Linguistic Interdependence,
the Optimum Age Question and Some Other Matters

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Cognitive/Academic Language Proficiency

Oller (see Oller, 1978, 1979; Oller & Perkins, 1978) has argued on the basis of a large number of studies that "there exists a global language proficiency factor which accounts for the bulk of the reliable variance in a wide variety of language proficiency measures" (1978, p. 413). This factor is strongly related to IQ and to other aspects of academic achievement. Most of the data reported by Oller and Perkins involved performance on standardized measures of language skills (e.g. vocabulary and reading comprehension tests) or on integrative tests such as oral and written cloze and dictation.

It is possible to distinguish a convincing weak form and a less convincing strong form of Oller's arguments. The weak form is that there exists a dimension of language proficiency which can be assessed by a variety of reading, writing, listening and speaking tests and which is strongly related both to general cognitive skills (Spearman's "g") and to academic achievement. The strong form is that this dimension represents the central core (in an absolute sense) of all that is meant by proficiency in a language. The difficulty with this strong position is immediately obvious when one considers that with the exception of severely retarded and autistic children, everybody acquires basic interpersonal communicative skills (BICS) in a first language (L1) regardless of IQ or academic aptitude. Also, the sociolinguistic aspects of communicative competence or functional language skills appear unlikely to be reducible to a global proficiency dimension (see Canale & Swain, 1979; Tucker, 1979).

For these reasons I prefer to use the term "cognitive/academic language proficiency" (CALP) in place of Oller's "global language proficiency" to refer to the dimension of language proficiency which is strongly related to overall cognitive and academic skills. The independence between CALP and BICS which is evident in L1 can also be demonstrated in L2 learning contexts, especially those which permit the acquisition (in Krashen's (1978) sense) of L2 through natural communication.

Genesee (1976), for example, tested anglophone students in grades 4, 7, and 11 in French immersion and "core" French programs in Montreal on a battery of French language tests. He reported that although IQ was strongly related to the development of academic French language skills (reading, grammar, vocabulary, etc.), it was, with one exception, unrelated to ratings of French oral productive skills at any grade level. The exception was pronunciation at the grade 4 level which was significantly related to IQ. Listening comprehension (measured by a standardized test) was significantly related to IQ only at the grade 7 level.

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Ekstrand's (1977) data from an immigrant language learning situation show a similar trend: IQ (as measured by the PMA R Factor) correlated .41 - .46 with reading comprehension, dictation and free writing and .22 - .27 with listening comprehension, free oral production, and pronunciation. The distinction between CALP and BICS is also consistent with the findings of Skutnabb-Kangas and Toukomaa (1976) that although parents, teachers and the children themselves considered Finnish immigrant children's Swedish to be quite fluent, tests in Swedish which required cognitive operations to be carried out showed that this surface fluency was, to a certain extent, a linguistic facade.

The extent to which any particular language measure is tapping CALP is an empirical question which can be answered by correlational techniques. For example, measures purporting to assess "oral language skills" may have very little in common; oral cloze tests are much more likely to be good measures of CALP than are fluency (words per minute) or subjective ratings of oral skills.² Other factors which might influence the composition of a CALP dimension are related to the language learning situation, e.g. the extent to which the language has been acquired or learned (Krashen, 1978); whether literacy skills have been developed, motivation to acquire or learn the language, etc.

Interdependence of CALP Across Languages

Oller does not consider in detail the question of whether his global language proficiency factor underlies an individual's performance in different languages. However, other investigators have hypothesized that the cognitive/academic aspects of L1 and L2 are interdependent and that the development of proficiency in L2 is partially a function of the level of L1 proficiency at the time when intensive exposure to L2 is begun (Cummins, 1979a; Skutnabb-Kangas & Toukomaa, 1976). In other words, both L1 and L2 CALP are manifestations of the one underlying dimension.

If the interdependence hypothesis is valid then L1 and L2 proficiency should relate strongly to each other and show a similar pattern of correlations with other variables such as verbal and nonverbal ability. The data compiled in Table 1 support this prediction. The pattern of findings is similar to those reported by Ekstrand (1977) and Skutnabb-Kangas & Toukomaa (1976) and suggests that measures of the cognitive/academic aspects of L1 and L2 are assessing the same underlying dimension to a similar degree.

However, these relationships do not exist in an affective vacuum and there are several factors which might reduce the relationships between L1 and L2 measures of CALP in comparison to those between intralanguage (L1-L1, L2-L2) measures. For example, when motivation to learn L2 is low, CALP will not be applied to the task of learning L2. The specific languages which are involved will also make a difference. Languages which are very dissimilar are likely to overlap less in term of processing mechanisms in comparison to languages which are similar (Genesee, 1979).

Age and L2 Learning

In the previous sections I have suggested that CALP can be empirically distinguished from BICS in both L1 and L2 and also that CALP underlies the development of cognitive/academic skills in both L1 and L2. It would be predicted on the basis of these hypotheses that older learners, whose CALP is

TABLE 1

Evidence for CALP across Languages : Correlations of IQ, Aptitude and Achievement Tests with L1 and L2 Measures

| Study | Aptitude, IQ and Achievement Tests | Measures of L1 | L1- L2 Corrs. | Measures of L2 |
|--|---|-------------------------------|----------------|--|
| Carey & Cummins (1979) (grade 5, E-F bilinguals, N = 104) | V-IQ (L-T) ² NV-IQ (L-T) CTBS- Reading | $\frac{E}{.60}$.41 .66 | - .57 | $\frac{F}{.68}$ - C ³ .45 .61 |
| Cummins (1977) (grade 3, E - Irish bilinguals, Irish medium school, N = 91) | EMLAT NV - IQ (Otis) | $\frac{E}{.76}$.57 | - .77 | $\frac{I}{.69}$ - ST .55 |
| Cummins (1977) (grade 3, Irish L2 learners, English medium school, N= 76) | EMLAT NV - IQ (Otis) | $\frac{E}{.74}$.62 | - .58 | $\frac{I}{.67}$ - ST .45 |
| Cummins & Lamont (1979) (grade 3, E-F bilinguals, N = 38) | V-IQ (CCAT) NV-IQ (CCAT) | $\frac{E}{.78}$.71 | - .54 | $\frac{F}{.61}$ - ST .35 |
| Lapkin & Swain (1977) (grade 5, E-F bilinguals, N = 92) | V-IQ (CCAT) NV-IQ (CCAT) CTBS - Reading | $\frac{E}{.55}$.43 .61 | - .61 | $\frac{F}{.37}$ - C .45 .69 |
| Taft & Bodi (1979) (29 Australian children from Russian speaking homes aged 8-10) | FMLAT NV-IQ (Raven) | $\frac{R}{.62}$ NS | - .50 | $\frac{E}{.78}$ - CS .42 |
| Genesee (1979) (evaluation of Hebrew, French English trilingual program) | | E E | - .74 - .42 | F - ST H - ST + C |
| Genesee & Hamayan (1979) (grade 1, E-F bilinguals, N = 54) | | E | - .60 | F - ST |
| Swain, Lapkin & Barik (1976) (grade 4, E-F bilinguals, N = 64) | | E | - .67 | F - C |

1. E = English, F = French

2. V-IQ = verbal IQ, NV-IQ = nonverbal IQ, CTBS = Canadian Tests of Basic Skills, L-T = Lorge-Thorndike, Otis = Otis-Lennon, CCAT = Canadian Cognitive Abilities Test, EMLAT = Elementary Modern Language Aptitude Test.

3. C = Cloze, ST = Standardized Test, CS = Composite Score of Various Language Tests.

Note: Although these correlations are derived from the studies referenced above they are not always reported in the published papers.

better developed, would acquire cognitive/academic L2 skills more rapidly than younger learners; however, this would not necessarily be the case for those aspects of L2 proficiency unrelated to CALP (i.e. L2 BICS).

An examination of the considerable number of studies relating age to L2 learning confirms this prediction. These studies have consistently shown a clear advantage for older learners in mastery of L2 syntax and morphology as well as in the cognitive/academic types of L2 skills measured by conventional standardized tests (Appel, 1979; Burstall et al., 1974; Ekstrand, 1977; Ervin-Tripp, 1974; Fathman, 1975; Genesee & Morcos, 1978; Skutnabb-Kangas & Toukomaa, 1976; Snow & Hoefnagel-Höhle, 1978).

The findings are less clear in aspects of L2 proficiency related to BICS, such as oral fluency, phonology and listening comprehension (Asher & Price, 1967; Asher & Garcia, 1969; Ekstrand, 1988; Fathman, 1975; Oyama, 1976, 1978; Seliger, Krashen & Ladefoged, 1975; Snow & Hoefnagel-Höhle, 1978). For example, Oyama (1976, 1978) reported an advantage for younger immigrant learners (6 - 10 years old) on both productive phonology and listening comprehension tests whereas Snow and Hoefnagel-Höhle (1978) found that older learners performed better on measures of these skills. A cautious generalization from these findings is that oral fluency and accent are the areas where older learners most often do not show an advantage over younger learners. For example, Ekstrand (1977) reports that oral production was the only variable on which older immigrant learners did not perform significantly better than younger learners. In areas such as listening comprehension the findings may well depend upon the measurement procedures used. Some tests may tap general cognitive skills to a greater extent than others. The issue is clearly susceptible to empirical investigation. It would be predicted that older L2 learners would perform better on any measure which loads on a CALP factor.

The only clear exception to this prediction is the Ramsey and Wright (1974, also Wright and Ramsey, 1970) study of over 1,200 immigrant students in the Toronto School System who were learning English as a second language. Ramsey and Wright reported a negative relationship between age on arrival in Canada and performance on standardized measures of English skills for students who arrived after the age of six. However, a reanalysis of their data (Cummins, 1979c) revealed a very different picture. Specifically, it was found that: (1) older learners acquire cognitive/academic L2 skills more rapidly than younger learners; (2) length of residence rather than age on arrival accounts for the major variance in performance; (3) age on arrival does appear to have some subtle effects on the rapidity with which L2 learners approach grade norms; for example, those who arrived at 6-7 made somewhat more rapid progress towards grade norms than those who arrived at either 4-5 or 8-9 (keeping length of residence constant); however, the 8-9 year olds learnt more in absolute terms.

Some Other Matters

The framework developed above has relevance to some other issues. For example:

Semilingualism. Although the term may be unfortunate (see debate in WPB nos. 17 and 19), the reality it refers to is simply low CALP. The phenomenon is basically the same as in a unilingual situation except that it manifests itself in two languages.

Code-switching. De Avila and Duncan (1979) interpret the interdependence hypothesis as implying that "to the extent that the two languages are 'interdependent', as evidenced in code-switching.... lower overall cognitive functioning will be evidenced" (p. 15). The "interdependence" of languages involved in code-switching refers to a very different phenomenon than the interdependence of L1 and L2 CALP discussed in the present paper. Code-switching can occur for a variety of reasons and no predictions regarding the cognitive causes of effects of code-switching follow from the interdependence hypothesis.

Bilingual education. For majority language children instruction mainly through L2 has been shown to be just as or more effective in promoting L1 proficiency as instruction through L1 (Swain, 1978); for minority language children instruction mainly through L1 has been shown to be just as or more effective in promoting L2 proficiency as instruction through L2 (see Cummins, 1979; Skutnabb-Kangas & Toukomaa, this issue; Troike, 1979). These findings support the interdependence hypothesis; in both instances the instruction is effective in promoting CALP which will manifest itself in both languages given adequate motivation and exposure to both languages either in school or wider environment.

The converse of these instructional conditions (e.g. L2-medium instruction for minority children) will usually not result in full bilingual proficiency because of factors such as low motivation to develop L1 (or L2 for majority children) or lack of exposure to literate uses of L1. Thus, the relationships between L1 and L2 outlined in the present paper presuppose motivational involvement and adequate exposure to L1 and/or L2.

Footnotes

1. I would like to thank Bob Anthony for a very helpful criticism of an earlier draft of this paper.
2. BICS is being defined only in a negative sense as those aspects of communicative proficiency which can be empirically distinguished from CALP. It is unlikely that BICS represents a unitary dimension; for example, phonology may have very little relationship to fluency. The term "basic" is used because measures of language production or comprehension which probe beyond a surface level are likely to assess CALP, e.g. range of vocabulary, knowledge of complex syntax, etc. BICS is similar to the Chomskian notion of "competence" which all native speakers of a language exhibit.

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